ABSTRACT

A caching system for increasing the operation concurrency between a cache module and a memory module by comparing received memory block identifiers, which correspond to texels needed for pixel composition, with memory block identifiers corresponding to texels locally stored within the cache module. If the received memory block identifiers match the memory block identifiers corresponding to locally cached texels, the system transmits these texels to a texture filter unit for pixel composition. If the received memory block identifiers do not match memory block identifiers corresponding to the locally cached texels, the system retrieves these texels from the memory module as fast as possible and then updates the cache module with the new texels. A plurality of first in, first out buffers are used to assist a controller module with synchronizing the transmission of the texels from the cache module and the overwriting of the texels received from the memory module into the cache module. Once locally cached, these texels also are transmitted to the texture filter unit for pixel composition.